

# **Fertility and suitability of the Spodosols formed on sandy beach ridges interspersed with Swales in the Kelantan - Terengganu Plains of Malaysia for kenaf production.**

## **ABSTRACT**

A study was conducted to evaluate the suitability of sandy soils in the Kelantan - Terengganu Plains (Peninsular Malaysia) and suggest measures to improve their fertility for kenaf production. The coastal landscape is scarcely utilized for crop production due to the inherently low soil fertility, nutrient imbalance and water deficit which can seriously inhibit crop growth. Three sandy Spodosols with humus - rich spodic horizon were found, locally named as Rhu Tapai, Rudua and Jambu Series with sandy matrix (>95% sand), low CEC (0.16-4.52 cmolc kg<sup>-1</sup>) and high acidity (pH 4-5). The mineralogy data showed quartz (dominant), with gibbsite, hematite and feldspars in trace amounts that result from high degree of weathering. The Corg of Bs and Bhs horizon was about 2%, with C/N ratio of 14 to 25, respectively; this can be exploited for kenaf production. Hence, we evaluated these sandy Spodosols for kenaf production using Wong (2009) Crop-Suitability Classification and found the soil to be marginally suitable under Class 4 described as 4Dnt where D stand for drainage, n for nutrient and t for texture. The major limitations were found to be excessive drainage, nutrient imbalance and sandy texture. Therefore, management practices recommended to improve the soils are (1) mulching the soils with different types of organic materials to retain water and plant nutrients; and (2) irrigating the soils during the dry period. If these agronomic practices are carried out, these soils could be productively used for growing kenaf.

**Keyword:** Soil-crop suitability classification; Spodosols; Tropical climate; Sandy soils; Soil fertility; Kenaf.